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FOREST RESEARCH NEWS

FOR THE SOUTH

June 1975

SOUTHERN & SOUTHEASTERN FOREST EXPERIMENT STATIONS, USDA FOREST SERVICE

Power Rossing Speeds Streaking

Collecting pine gum for caulking seams and tarring ropes on wooden ships was hard work when the practice was started in the United States in the early 1600's. Although its products are no longer used on wooden ships, the naval stores industry still survives in the South and still requires strenuous labor.

U. S. Forest Service scientists, however, are making gum collection easier and more profitable. Their most recent development is a motorized tool that removes the outer bark at the base of slash and longleaf pines to prepare a smooth seat on which to attach cups and cutters.

This operation, called rossing, requires a lot of stamina when done by hand, and one man can ross no more than 300 trees in a day. With the motorized tool, one man can ross about 500 trees per day, and he can do a better job. That is, he can remove bark to a greater height on the tree, making later operations easier and less expensive.

The new rossing tool is powered by a light-weight chain-saw motor. The U. S. Forest Service

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Let's hear it from forest users!



Motorized rossing tool.

PUBLIC ASKED TO TAKE PART IN LONG-TERM FOREST PLAN

If he is to succeed, any manager should have realistic goals and sufficient resources to accomplish them. For managers of the Nation's forests, clearly stated goals have often been lacking, because Americans have never decided exactly what they want from their forests. The Forest and Rangeland Renewable Resources Planning Act, which became law in 1974, will force us to make up our minds. While final decisions on goals and funding will be made by Congress and the President, the public is encouraged to participate in the decision-making process.

Many conflicts have arisen in recent years over the use of forest lands. Demands for the goods and services provided by the Nation's forests have been matched by concerns over conservation. Some people want forests to be managed for maximum timber production, others favor setting aside large areas for wilderness, and still others want extensively developed recreation areas. These objectives cannot all be pursued on



Chipping a streak.

the same piece of land though many uses often are compatible on the same tract. If there were no shortage of land, each activity might be pursued to the satisfaction of its advocates on separate tracts. Since the supply of forest land is finite and shrinking, compromises must be struck, and goals and priorities must be set.

The Resources Planning Act directs the U. S. Forest Service to develop a long-range program that will assure an adequate supply of forest resources for the future. All forest lands are being considered in the analysis. A 4-year plan is now being put together for 1976 through 1979. Thereafter, the Act requires 10-year plans. All Forest Service activities—research, cooperation with State and private organizations, and management of national forests—will be included in the plan. Since future funding will probably be based on contributions of individual activities to selected goals, goal selection is a key step in the process.

A lot of information, including possible alternative goals, has been published and distributed for public comment. A draft of the resource assessment and of the program will be available this August. To receive documents already published or to be placed on the mailing list for future documents, write the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, N. C. 28802.

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has applied for a public patent on the tool. Therefore, any individual or firm will be able to manufacture it for personal use or for sale. Additional information is available on request from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.

The motorized rossing tool is but one in a series of developments to improve the prospects of the gum naval stores industry. Most collectors have small operations, and would never have been able to finance the research leading to these improvements.

In one of the first successful forest tree breeding efforts in the United States, Forest Service scientists at Olustee, Florida, developed strains of slash pine that yield twice as much gum as wild trees. Nursery seedlings from these improved strains are available for commercial planting in the Southeast.

A technique for stimulating gum flow by applying acid paste was also invented at the Naval Stores and Timber Production Laboratory in Olustee. After gutters and a cup have been placed on the pine tree, a horizontal strip of bark (streak) must be removed (chipped) above the gutters. Gum flows from ducts in the exposed wood. If the wood is not treated with acid, gum flow soon slows and ceases. Acid holds the gum ducts open for 2 to 4 weeks, after which a new streak must be chipped. The acid paste that Olustee scientists recommend stays on the wood and does not contaminate and degrade the gum that is collected. Naval stores collectors throughout the world use the acid-paste technique developed at Olustee.

Engineers are trying to design a motorized tool for chipping streaks after the trees have been rossed as well as a vehicle that is practical for picking up the gum (dipping). At present, trees are chipped with a hand tool called a bark hack. A worker walks from tree to tree dipping gum, which he puts into a bucket that he carries with him. When the bucket is full he carries it to a road and dumps the gum into a barrel.

What may seem to the outsider to be minor variations in the ways gutters are hung, streaks are chipped, and acid paste is applied can greatly influence the amount of work done and the amount of gum produced. The Olustee Laboratory, therefore, has prepared a manual that shows how to do the job most efficiently. This manual, by Ralph W. Clements, is also available from the Southeastern Forest Experiment Station.

WANTED: Minorities in Natural Resource Careers

Natural Resources Need YOU!

That is the message from a meeting of industry officials, government land managers, and educators from more than 30 colleges and universities. Held at Tuskegee Institute in Alabama, the 3-day meeting was "A Workshop on Entry of Minorities Into Natural Resource Careers," sponsored by the U.S. Forest Service, Weyerhaeuser Corporation, and Tuskegee Institute.

Too few minorities are graduating from college with natural resource degrees. In 1967 only two of 18,000 professional foresters in the U. S. were black. Why do minorities appear not to want a career in natural resources? What are the opportunities in this field? What are some of the tools that have been used in recruiting minorities into natural resource careers?

These matters were discussed by the 100 workshop participants. Small groups were then asked to develop plans for action and to assign responsibility for that action.

Among the successful programs for attracting minorities is that at Tuskegee Institute, where students can take 2 years of pre-forestry work then transfer to a university or college for 2 more years of training and a degree. The program was initiated by the U. S. Forest Service and Tuskegee Institute in 1968. Substantial support is given by means of summer jobs and funds for scholarships and teaching from the Weyerhaeuser Corporation. The Forest Service provides the full-time assistance of a forester for teaching and recruiting students and placing them in sum-

mer jobs. Another successful effort is in the Southwest where the Forest Service works with local officials to provide jobs on national forests for Americans of Mexican heritage.

Barriers to achieving the goals seemed to fall into the following categories: academic (learning obstacles which low-income and minority students must surmount), geographic (distance between a school and a student's home), financial, aspirational, physiological-psychological, and sociological barriers.

Workshop participants agreed that they need to let minority youth know they are needed as natural resource professionals and that career opportunities are available to them.

Industry, government, and college leaders from more than 20 States made written commitments for themselves and their companies, agencies, and schools. All are aimed at action



Mock Hogons (right), the first Tuskegee Institute student to finish a 4-year program in Forestry when he received a BS degree from the University of Michigan, talks with John R. McGuire, Chief of the Forest Service, during the workshop at Tuskegee. Hogons is presently employed by the Pacific Northwest Forest and Range Experiment Station at Seattle, Washington.

to get minorities into natural resource careers.

Limited single copies of the workshop proceedings are available from the Southern Forest Experiment Station, 701 Loyola Ave., New Orleans, La. 70113.



Sophomore students in pre-forestry training at Tuskegee Institute in Alabama during Fall 1974 included the following: Front row, left to right, Frank Aldridge, Jackson, Miss.; Willie McIntosh, Tuskegee; Ronald King, Tuskegee; James Earl Bradley, Greenville, Miss.; Jerry Bettis, Mobile, Ala. Back row, left to right, Quenton Farr, Morrell, Ark.; Michael Heord, Chattanooga, Tenn.; Larry Godt, Southern Forest Experiment Station Unit Leader of the pre-forestry program; Dan Stewart, Clayton, Ala.; Leon Foster, Greenville, Miss.; Michael Stevens, Montgomery, Ala.

Louisiana Increases Supplies to Forest Industries

Louisiana forests supplied more than 561 million cubic feet of roundwood to forest industries in 1973, an increase of 59 percent in the decade since 1963. Softwoods, mainly pine, made up more than three-fourths of the total.

Pulpwood was the major product, accounting for 46 percent of the timber harvest. Saw logs made up 33 percent, veneer logs added 18 percent, and the rest was mostly poles and piling. A total of 207 wood-using plants were in operation.

These are among major findings discussed in a bulletin by D. F. Bertelson, "Louisiana Forest Industries, 1973."

Three-fourths of the pulpwood harvested is pine, just as in 1963.

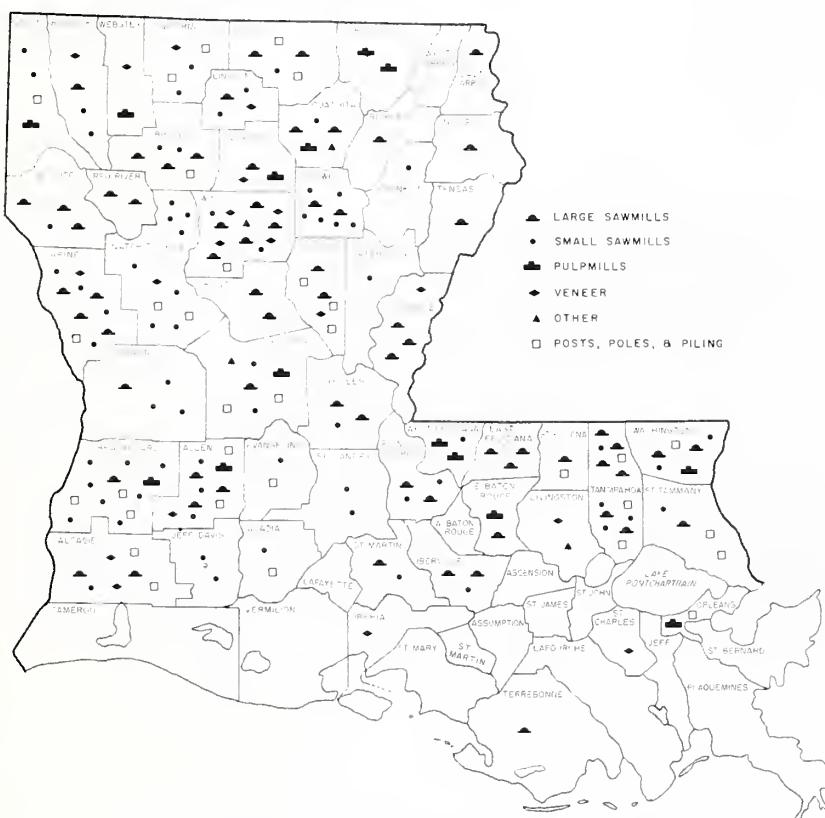
Among hardwoods, the trend is away from soft-textured species such as sweetgum and blackgum toward hard-textured woods like oak. A parish or county, that harvests more than 100,000 cords of pulpwood in a year is regarded as a big producer, and Louisiana had 13 such parishes in 1973. Sabine and Vernon were leaders, with more than 200,000 cords apiece. Nevertheless, Louisiana is a net importer of pulpwood, relying on other States for one-fourth of its needs. Mississippi, Arkansas, and Texas are the chief suppliers, but some hardwood came all the way from Nebraska. Reason for the imports is the huge capacity of Louisiana's 14 pulpmills.

The saw log harvest was 1.1 billion board feet, up 4 percent from 1963. Two-thirds of the volume was softwood, the rest mostly oak and gum. Sawmills have declined in number but increased in size. Of 138 now operating (as compared to 164 in 1963), 29 can turn out more than 10 million board feet a year.

Output of veneer logs was more than 13 times the 1963 harvest. This great increase, Bertelson explains, is due entirely to emergence of the southern pine plywood industry, now represented by 13 Louisiana plants. The hardwood veneer industry is declining because suitable timber is scarce and competition from substitute products is keen.

In converting logs and bolts into lumber and veneer, manufacturing plants generate large amounts of leftovers. Coarse items such as slabs, edgings, and cull pieces are used almost completely—mainly for pulp chips. And three-fourths of the fine residues, like shavings and sawdust, is also salvaged. Much bark accumulates at mills, and most of it is used for industrial fuel. All in all, the plants have made big gains in retrieving material formerly wasted.

Bertelson's report is Resource Bulletin SO-51. Copies are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, La. 70113.



A total of 207 wood-using plants were operating in Louisiana between 1963 and 1973.

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Estimating Sawmill Residues In Standing Trees Possible

Once, lumber was the only salable product from southern sawmills.

The slabs, edgings, and sawdust that remained after lumber manufacturing created a disposal problem and were called residues. In modern southern sawmills these residues are chipped and sold to pulpmills, increasing mill profits and improving utilization of timber resources. In fact, in some sawmills the sale of chipped residues makes the difference between profit and loss for the entire milling operation.

Because these residues now have value, a timber appraiser must have a way of estimating the residue volume as well as the lumber volume that a standing tree will produce. Southeastern Forest Experiment Station scientists are providing information that is needed to make such estimates.

They carefully measured trees in the forest, hauled the usable portions to cooperating sawmills, and recorded the exact volumes and weights of lumber and residues from each tree. After the process was repeated for a large number of trees of a given species, the scientists developed equations that predict weights and volumes of bark, sawdust, chips, and lumber that come from trees of given sizes. With the equations they generated tables that contain the information needed by timber appraisers.

Since the weight and volume yields of similarly sized trees vary among species, this work

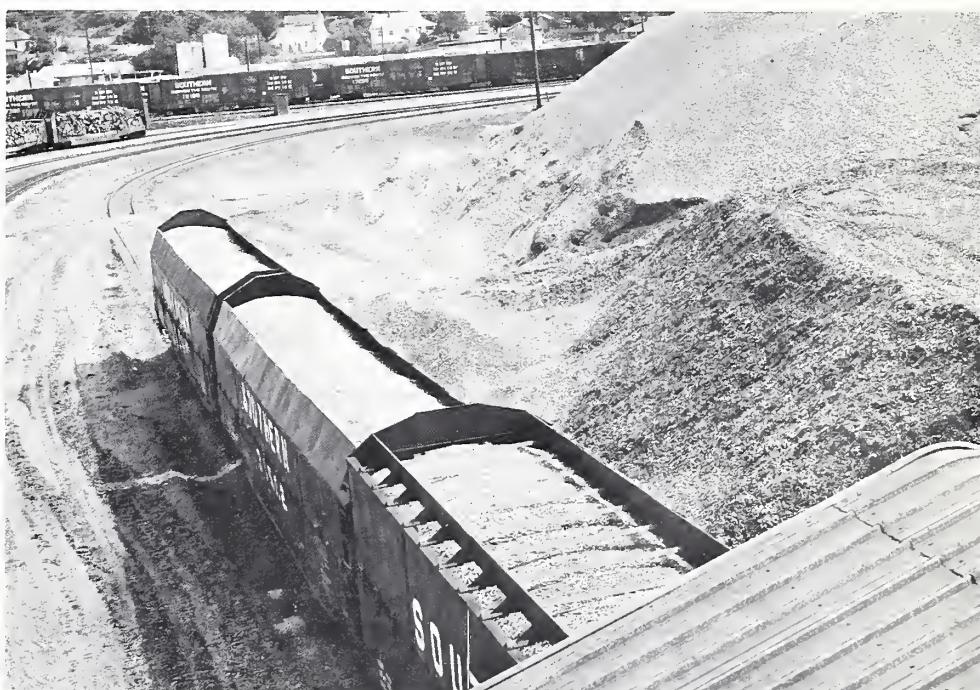
has been done on a total of six important southern timber species: loblolly, longleaf, shortleaf, and slash pines plus black oak and yellow-poplar. A separate Forest Service Research Paper is being published for each of these species. Copies of these papers, by Alexander Clark III, Michael Taras, James Schroeder, and Douglas Phillips, are available from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, N. C. 28802.

Paper-making is one of the oldest industries in the U. S. A primitive rag-paper mill near Germantown, Pennsylvania, established in 1690, is the first recorded paper-making operation in the country.

Tree's Trouble May Be You

Trees are some of man's best friends. They provide shade, beauty, homes for wildlife, wood products, and much more. But trees provide these benefits only as long as they are healthily.

So begins a new U. S. Forest Service booklet, "Your Tree's Trouble May Be You!" Color illustrations and text describe major people-caused tree injuries, their prevention and treatment. The booklet was prepared by the Northeastern Area, State and Private Forestry. Single copies are available from the Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, La. 70113. Multiple copies may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402, for 70 cents each. Ask for Agriculture Information Bulletin No. 372.



Residues that were once burned at sawmills now are chipped, loaded on railroad cars, and sold to pulpmills.

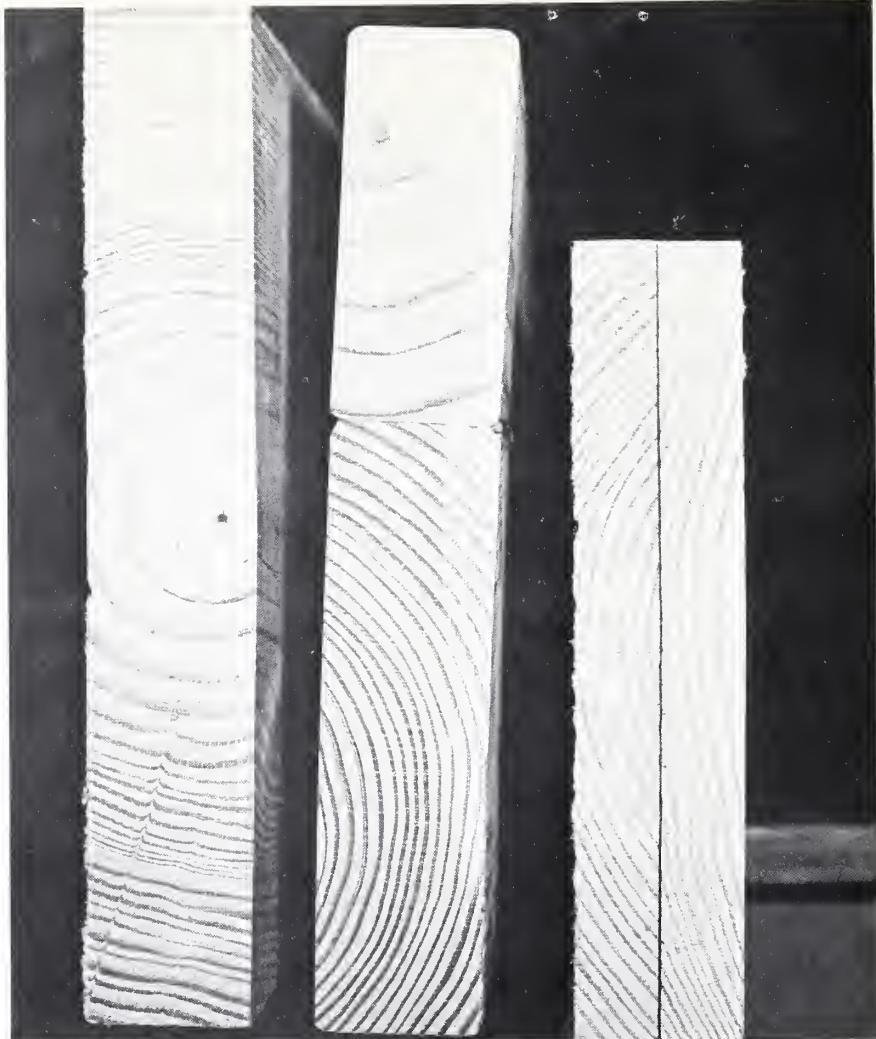
Increasing Profits Of Southern Sawmills

A wood technologist at the Southeastern Forest Experiment Station has proposed two methods for increasing profits of southern pine sawmills. Neither method will cost the consumer anything. The scientist, Robert H. McAlister, proposes that low-grade boards and narrow dimension lumber (2 by 4's and 2 by 6's) be glued or otherwise fastened to produce wide dimension lumber.

The proposal is particularly attractive for pine sawmills in the South because they process small logs and consequently make large quantities of 2 by 4's and 2 by 6's. Even in the best of times, this narrow material is readily available and does not command especially high prices. Prices for 2 by 10 and larger lumber are far higher because little of it is produced in the South. One solution McAlister proposes is to edge-glue narrow dimension lumber into sizes that command a higher price.

Southern pine mills also normally produce an excess of low-grade boards. To get near-maximum yield from a log, some of these boards must be sawn, but demand for them has declined sharply with increased use of panels for sheathing and subfloors. As a result, board prices have declined over the past few years. McAlister believes these boards can be profitably made into laminated beams.

He has demonstrated that beams made in the ways suggested are sufficiently strong to meet construction standards. Cost figures indicate that it would be profitable to produce beams from boards by nailing.



Vertically laminated (right) and edge-glued southern pine dimension lumber (center) is as strong and stiff as dimension lumber sawn in the ordinary manner (left).

The processes are described in the FOREST PRODUCTS JOURNAL for July and August 1974. Reprints are available from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.

Guide Describes Weevil Protection

Forest managers in the South can protect their young pine stands from weevils by properly scheduling harvests and planting. Pales and pitcheating weevils breed in freshly cut pine stumps, and emerging adults often girdle the stems of young seedlings planted soon after

harvesting. Knowing when to cut and plant can spell the difference between a healthy young stand and a worthless expanse of dead seedlings.

A field guide for preventing weevil damage has been prepared for forest managers in the South by Charles F. Speers and Edward P. Merkel of the Southeastern Forest Experiment Station. Designed to fit handily in a coat pocket, it contains illustrations of pales and pitcheating weevils and provides guidelines on timing harvests, site preparation, and planting to avoid weevil damage. Single copies can be ordered from the Southeastern Station at P. O. Box 2570, Asheville, North Carolina 28802. Ask for General Technical Report SE-5.

Why Weibull?

When a stand's diameter distribution is known, yields, conversion costs, needed silviculture treatments, and product specifications can all be determined. But a tabulation of diameters is too cumbersome to compute, and traditional mathematical models have been difficult to interpret and have required sophisticated analytical techniques. The Weibull function overcomes these problems. Weibull constants can be readily understood because they are directly related to stand characteristics such as age and dominant height. In addition, the number of stems per acre in any diameter class can be easily determined with a desk calculator.

Computer programs which facilitate work with Weibull's function have been compiled by R. L. Bailey of the Southern Forest Experiment Station. Bailey has successfully used this new approach in studies of growth and yield of loblolly and shortleaf pine plantations in the Cumberland Highlands and of Monterey pine stands in New Zealand.

Further details on the procedure are contained in "Weibull Model for *Pinus radiata* Diameter Distributions" by Bailey and in "Quantifying Diameter Distributions with the Weibull Function" by Bailey and T. R. Dell. Copies are available from the Southern Forest Experiment Station, 701 Loyola Avenue New Orleans, Louisiana. The computer programs can be obtained at the same address.

More than 1,000 fire fighters from the South went to Washington, Idaho, and Montana in August to help battle huge forest fires on National forests.



Volumes of hardwood timber are building up in the Southern Appalachians.

Timber Supplies Increasing In North Carolina Mountains

Since 1964, timber volume in the Mountain Region of North Carolina increased by 1.4 billion cubic feet, or 32 percent. Volume of sawtimber increased by 4.6 billion board feet, or 38 percent. These are some of the findings of a forest survey recently completed by the Southeastern Forest Experiment Station, (U. S. Forest Service) with the help of the North Carolina Forest Service, Tennessee Valley Authority, and the Southern Region of the U. S. Forest Service.

Commercial forest now occupies 4.0 million acres, or 71 percent of the total land area. Since 1964, about 8 out of every 10 acres now classified as commercial forest showed no evi-

dence of treatment or major disturbance. The report points out that although average stand density has increased, about one out of every five trees 5.0 inches and larger fails to qualify as growing stock because of roughness, rot, poor form, or species.

In 1973, net growth totaled 224 million cubic feet, and exceeded removals by about three times. About 50 percent of this growth was oak and yellow-poplar.

Copies of the survey report, "Forest Statistics for the Mountain Region of North Carolina, 1974," by Noel D. Cost, are available on request from the Southeastern Forest Experiment Station, P. O. Box 2570, Asheville, North Carolina 28802.

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